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(54) Title: METHOD AND APPARATUS FOR PRIORITY QUEUING OF TELEPHONE CALLS

(57) Abstract

A PBX/automatic call distributor (ACD) system (12) allows callers to exercise control over their rank order within a phone queue. The ACD (12) accesses a call database (62) and develops offers to be made to callers, based upon a caller reaching a particular position in a queue or at a position at which the call is first placed in the queue. An interactive voice response unit (IVRU) (14) is employed to offer a caller a chance to move up in the queue in return for a payment. If the caller wishes to accept the offer, the caller responds by using the touch-tone keys of his/her telephone and entering a credit card number, an account number, or indicating some other method of payment. The ACD (12) then changes the rank order of the caller's call within the phone queue and alters the rank position of other calls within the queue, accordingly.

Method and Apparatus for Priority Queuing of Telephone Calls

FIELD OF THE INVENTION

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The present invention relates to a system and method
for controlling the queuing of incoming telephone calls
and, more particularly, to a system and method for enabling
a caller to alter an assigned position of a call in a

10 queue.

BACKGROUND OF THE INVENTION

As more and more companies offer telephone access to
15 their customer service, sales and support staffs, problems
associated with waiting on hold have grown. Such problems
include, for example, excessively long waits, full queues
that can not accept additional callers, and accidental
disconnects. These problems have engendered a high level
20 of frustration and ill will amongst callers. Some
companies now routinely inform calling customers on hold
how long a current wait is expected to last before a
service representative will be available to take the call.

25   Some companies offer various levels of speed-of-answer
services to their customer base. This is especially
important where time-on-hold can tie up valuable business
activities of the caller. Thus, a company might offer one
telephone number for service which guarantees no more than
30 a five-minute wait, and another less expensive number which
guarantees that an agent will be available in no more than
a 15 minute wait. Incoming callers are thus charged more
for the shorter response guarantee time than for calls with
a longer response guarantee time.

35

To implement an automatic call answering/queuing
system of the type described above, manufacturers offer a
range of products. Ordinarily, automatic call answering
systems include a private branch exchange (PBX) which
40 processes an incoming call and identifies the number dialed

1

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via a dialed number identification service function (DNIS).
Once that information is stored, the PBX checks a routing
database for DNIS routing instructions and routes the call
to an automatic call distributor (ACD). The ACD logs each
5 call in memory and assigns each call a rank, based on the
order in which the call arrived. If there are currently N
calls in a queue, the ACD normally assigns a next call
received from the PBX to position N+1 in the queue.

10   When the PBX indicates to the ACD that an agent is
available to answer a call, the call resident at the top of
the queue in the ACD is removed and sent to the PBX, which
takes the corresponding incoming line off hold and routes
the call to the available agent. The ACD then moves up each
15 call in the queue and the process continues.

If the system is provided with an automatic voice
response capability, it includes an interactive voice
response unit (IVRU). The IVRU is utilized to
20 intermittently communicate with incoming callers,
indicating position in the queue and waiting time until the
call is expected to be answered.

U.S. Patent 5,020,095 to Morganstein et al. describes
25 a call processing apparatus which queues calls that are
waiting to be connected to a service position. The
apparatus calculates a queue position and wait time and
transmits the queue data to the calling party. U.S. Patent
5,444,774 to Friedes describes an interactive queuing
30 system for a call center and collects initial information
from the caller while the call is in the holding queue.
The information input by the caller enables the apparatus
to query a database and to retrieve additional information
needed to service the call. That information is then
35 displayed to a next available agent as the call is received
by that agent.

U.S. Patent 5,561,707 to Katz describes a telephone
interface system which is adapted to select or qualify a
40 set of callers, acquire data from the callers in the set
2

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and statistically analyze the acquired data. U.S. Patent
4,788,715 to Lee describes an automatic call distributor
system wherein calls waiting in a queue are informed of
expected wait time until connection to an agent. The
5 announcements are periodically updated to reassure
customers that they are progressing in the queue. The
customers are also given the opportunity to leave a message
if they do not wish to wait in the queue.

10   While the prior art describes a method for enabling a
caller to arrange, prior to a call, for access to a
priority queuing arrangement, there is need for a system
which will enable a caller to alter his/her position in a
phone queue. For instance, a caller's data processing
15 system may have become inoperative, resulting in a virtual
shutdown of the related business. Applicants know of no
provision in the prior art for enabling a caller who is
placed in a phone queue to arrange for any movement within
the queue.

20

SUMMARY OF THE INVENTION

     Accordingly, it is an object of this invention to
provide a phone queuing system and method which enables a
25 caller to move his/her call position in a queue.

     It is another object of this invention to provide a
system and method for enabling a PBX/ACD system to offer to
incoming callers the ability to change their positions
30 within a queue in which their respective calls have been
placed.

     In accordance with the invention, a PBX/ACD system
allows callers to exercise control over their rank order
35 within a phone queue. The ACD accesses a call database and
develops offers to be made to callers, based upon a caller
reaching a particular position in a queue or at a position
at which the call is first placed in the queue. An IVRU is
employed to offer a caller a chance to move up in the queue
40 in return for a payment. If the caller wishes to accept

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the offer, the caller responds by using the touch tone keys
of his/her telephone and entering a credit card number, an
account number, or indicating some other method of payment.
The ACD then changes the rank order of the caller's call
5 within the phone queue and alters the rank position of
other calls within the queue, accordingly.

BRIEF DESCRIPTION OF THE DRAWINGS

10   Fig. 1 is a block diagram illustrating a priority
phone queuing system that incorporates the invention.

        Fig. 2 is a block diagram of a private branch exchange
(PBX).

15
        Fig. 3 is a block diagram of an automatic call
distributor (ACD).

        Fig. 4a is a schematic drawing showing a call order
20 database maintained within the PBX of Fig. 2.

        Fig. 4b is a schematic drawing of an offer database
maintained within the ACD of Fig. 3.

25   Fig. 4c is a schematic drawing of an acceptance
database located within the ACD of Fig. 3.

        Fig. 5 is a flow chart illustrating the process by
which calls are processed in rank.

30
        Fig. 6 is a flow chart describing the process by which
offers for position upgrades in a queue are created and
delivered to a caller.

35   Fig. 7 is a continuation of the flow chart of Fig. 6.

        Fig. 8 is a flow chart describing the process by which
calls are repositioned in a queue.

40 DETAILED DESCRIPTION OF THE INVENTION

4

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Referring to Fig. 1, a priority phone queuing system
comprises a PBX 10, an ACD 12 and an IVRU 14. PBX 10
receives incoming calls and is, in turn via a trunk 20,
5   connected to a plurality of agent terminals 16. In the
description which follows, it will be assumed that all
agent terminals 16 are busy and that PBX 10 cannot respond
to an incoming call by making a direct connection to an
agent. As a result, PBX 10 is forced to place an incoming
10 call on hold and to provide call data to ACD 12. In
response, ACD 12 places the incoming call in a queue, in
the order received. Thereafter, when PBX 10 determines
that an agent terminal is available, it so instructs ACD 12
which provides the next call at the top of the queue back
15 to PBX 10, which then takes the corresponding incoming line
off hold and connects the caller to the available agent.

After the call has been listed in the queue and in
accord with preset criteria, ACD 12 instructs IVRU 14 to
20 make a queue movement offer to a caller and to await a
response thereto from the caller. If IVRU 14 receives an
acceptance of the queue movement offer, it records the
caller's identifier and payment information, e.g., account
number, credit card number, etc... and provides that
25 information to ACD 12. In response, ACD 12 moves the call
to a new rank within the call queue and the process
continues.

IVRU 14 can be instructed by ACD 12 to make the queue
30 movement offers either upon initial queuing of a call, when
a call reaches an Nth position in a queue, periodically, or
upon some other basis chosen by the user.

Turning to Fig. 2, PBX 10 comprises a conventional
35 switch network 24 which receives incoming calls via trunk
26 and provides outgoing connections to various ones of
agent terminals 16 (Fig. 1) via trunk 20. Control of switch
network 24 is exerted by central processing unit (CPU) 30
which is, in turn, controlled by procedures stored in
40 random access memory (RAM) 32 and read-only memory (ROM)

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34.

Control procedures and databases used by CPU 30 are held in data storage device 36 (e.g. a hard disk drive).
5   Stored therein are a transaction processor routine 38, a routing database 40 and an agent database 42. CPU 30 is connected to receive input from a conventional clock 33. Transaction processor routine 38, when downloaded to RAM 32, enables handling of incoming calls and control of
10 switch network 24. Routing database 40 maintains the necessary internal routing information regarding agent terminals 16 (and any other terminals that are connected to PBX 10). Agent database 42 provides further information regarding each agent terminal and is utilized to enable the
15 routing of control signals and telephone calls between PBX 10 and the individual agent terminals.

PBX 10 controls communications with each of agent terminals 16 via an agent interface 44 and a communication
20 port 46, with the signalling occurring over control wiring (not shown) between the PBX and the agent terminals. The signalling may, in the alternative, be carried on the internal telephone network. An ACD interface 48 enables PBX 10 to communicate with ACD 12 (shown in Fig. 3).
25

Referring to Fig. 3, ACD 12 is controlled by a CPU 52 and includes a clock 55, a ROM 53 and a RAM 54, the latter of which maintains a queue 56 (or queues) of calls awaiting connection to an agent terminal 16. A data storage device
30 58 includes a transaction processor 60 that enables handling of queue 56 and other functions performed by ACD 12, to be hereafter described. Data storage device 58 further includes a call database 62, an offer database 64 and an acceptance database 66, all of which will be
35 hereafter described in conjunction with the schematic illustrations of Fig. 4a-4c. ACD 12 communicates with PBX 10 via communication port 68 and PBX interface 70, and with IVRU 14 via IVRU interface 72.

40   It is to be understood that PBX 10, ACD 12 and IVRU 14

6

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are all commercially available units. For instance, the
Ameritech Corporation's Call Center provides automated call
attendant functions, automatic call distributor functions
and interactive voice response functions.

5

Turning now to Figs. 4a-4c, three databases which are
schematically illustrated aid in the implementation of the
invention. Call database 62 (Fig. 4a) includes a listing
of the calling phone number; a call tracking number; a call

10 rank value which indicates the position of the call within
a call queue; the time the call was received; an offer
tracking number and an acceptance tracking number which
enables cross references to other databases.

15   Offer database 64 includes, for each call, an entry
for a call tracking number for the call; the phone number
of the caller; an offer tracking number; an offer
description indicator; a time of offer value and an entry
indicating the number of offers made to the caller.

20

Acceptance database 66 includes, for each call, a call
tracking number; the phone number of the caller; an offer
tracking number; an indicator regarding payment method;
payment data indicating the amount; and the time of offer

25 acceptance.

The data contained within call database 62, offer
database 64 and acceptance database 66 are employed to
enable ACD 12 and IVRU 14 to determine to which callers a

30 queue movement offer should be made; when the offer should
be made; what the offer should be; and to handle the
response of the caller to an offer.

It will be understood that the above-described

35 databases are intended to illustrate one embodiment of the
present invention. Many alternative database structures
and methods of performing the desired functions will be
apparent to those skilled in the art.

40   Referring to the flow diagrams of Figs. 5-8, the

7

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procedure employed by the invention will be described.
When a call is received by PBX 10 (box 100), PBX 10
determines the callee's telephone number, i.e., extension
(box 102) and identifies the route thereto by accessing a
5 dialed number identification service (DNIS) (box 104).
Once the routing information is obtained from the DNIS,
(box 106), the call is put on hold and data regarding the
call is routed to ACD 12 (box 108).

10   ACD 12 logs the call and updates its call database
(box 110). by establishing an entry for the call, placing
the call in call queue 56, and recording the necessary data
in call database 62. Thereafter, a rank, or queue
position, upgrade offer is created, which in the present
15 embodiment is based upon (i) the position of the call in
call queue 56 (i.e., call rank) and (ii) the estimated wait
time before the call is expected to be answered (box 112).
The queue position upgrade offer tells the caller that a
repositioning will be made of the call in the queue to a
20 higher rank, upon acceptance by the caller of the offer and
indication of a willingness to make the required payment.

Once the queue position upgrade offer is created, ACD
12 instructs PBX 10 to take the call off hold (box 114) and
25 send the queue position upgrade offer to IVRU 14 (box 116).
IVRU 14 then transmits (through PBX 10 and ACD 12) the
offer to the holding call line (box 118).

Thereafter, IVRU 14 captures the customer response
30 either accepting or declining the offer (box 120). The
acceptance/rejection of the offer is then transmitted to
ACD 12 (box 122). If the offer has been accepted by the
caller (decision box 124), the acceptance is stored in
acceptance database 66 (box 126). If the offer has been
35 declined, another offer is created and sent to the caller
(box 128). The new offer will generally await the
expiration of an additional time period, at which time it
will be dispatched to the caller and the process will then
repeat.
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8

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Assuming acceptance of the offer, ACD 12 receives the acceptance data from IVRU 14 (box 130) and assigns a new rank to the call (box 132). The new rank is stored in the call order database (box 134) and the call is moved up to
5   the new rank position in queue 56 (box 136).

The above description has assumed that the call will be moved ahead in position in the same queue. An alternative is to move the call from the queue in which it
10 is positioned to a priority queue where there is a guarantee of response within a set of period of time. For example, a customer waiting for technical support can be offered the option of waiting for a company's own representatives (for which there is no charge), or can be
15 switched to an outside private service where there is a guarantee of a response in less than a predetermined time, but requiring a charge for the service.

It will be understood that the offer terms are
20 selected dependent on the circumstances of a given calling situation. For example, in customer service situations where the work flow of a caller may be dependent on the information to be obtained through the call, offers to change position in the queue may be made on a frequent
25 basis and for a significant charge. A graduated fee may be provided from which a caller may select one of many available positions in the queue. An emergency option may be offered wherein, for a predetermined charge, a caller is guaranteed to be moved to the next in line for a response.
30

In situations where a change in position may not be as desirable to a caller, offers to change position may be made less frequently and/or for a lesser charge.

35 In yet another embodiment of the present invention, callers may be offered an option to bid for a desirable position in the calling queue. For example, in a situation where a limited number of sporting event tickets are made available for sale by telephone, callers may be offered an
40 option to bid on a relative position within the queue. In

9

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such circumstances, while the cost of the tickets may be relatively low, ticket availability will still be limited to those whose position in the queue permit their purchase before they are sold out. In such circumstances, callers

5   may wish to exercise an option to bid on a more desirable position within the queue.

It will be apparent that an almost infinite variety of terms can be used to implement the offer, depending on the

10 particular purpose to be suited.

It will further be understood that the hardware implementation of the system may be varied, depending on the environment. In any event, irrespective of the hardware

15 configuration, the functions described above need to be accomplished to carry out the invention. For example, the PBX may be entirely omitted if the PBX functionality is incorporated into the VRU or the ACD. Thus, incoming calls could go directly to the VRU, which would be, in turn,

20 connected to the ACD or vice-versa.

It should be understood that the foregoing description is only illustrative of the invention. Various alternatives and modifications can be devised by those

25 skilled in the art without departing from the invention. For instance, performance of the invention may be accomplished under software control which is loaded from one or more media disks, with the media disks including the necessary code to cause processing means to carry out the

30 invention. Accordingly, the present invention is intended to embrace all such alternatives, modifications and variances which fall within the scope of the appended claims.

10

CLAIMS

1.   An apparatus for call processing, comprising:
      a PBX operative to receive a call;
5   a voice response unit operative to receive a request
for an earlier answer for the call; and
      an automatic call distributor operative to direct the
PBX to answer the call within a first time period if the
voice response unit does not receive a request for an
10 earlier answer for the call, and
      answer the call within a second time period that is
shorter than the first time period if the voice response
unit receives a request for an earlier answer for the call
after the PBX receives the call.

15

2.   An apparatus for call processing, comprising:
      a PBX operative to receive a call;
      a voice response unit operative to transmit an upgrade
offer and receive a response to the upgrade offer; and
20   an automatic call distributor operative to direct the
PBX to
           answer the call within a first time period if the
response does not indicate an acceptance of the upgrade
offer and
25   answer the call within a second time period that
is shorter than the first time period if the response
indicates an acceptance of the upgrade offer.

3.   An apparatus for call processing, comprising:
30   a PBX operative to receive a call;
      an automatic call distributor operative to place the
call in a queue;
      a voice response unit operative to transmit an upgrade
offer and receive an acceptance of the upgrade offer; and
35   wherein the automatic call distributor is further
operative to move the call up in the queue in response to a
received acceptance, thereby moving the call closer to a
top of the queue.

40 4.   An apparatus for call processing, comprising:

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a PBX operative to receive a call;

an automatic call distributor operative to place the
call in a queue, the call having a position in the queue;

a voice response unit operative to transmit an upgrade
5 offer and receive an acceptance of the upgrade offer; and

wherein the automatic call distributor is further
operative to reposition the call in the queue to a higher
rank in response to a received acceptance.

10 5.   An apparatus for call processing, comprising:

a PBX operative to receive a call;

an automatic call distributor operative to place the
call in a queue, the call having a position in the queue;

a voice response unit operative to transmit an upgrade
15 offer and receive an acceptance of the upgrade offer; and

wherein the automatic call distributor is further
operative to alter the position of the call in the queue
such that the call may be answered in a shorter period of
time than if the position had not been altered.
20

6.   An apparatus for call processing, comprising:

a PBX operative to receive a call;

an automatic call distributor operative to place the
call in a queue;

25   a voice response unit operative to transmit an upgrade
offer while the call is in the queue, and receive an
acceptance of the upgrade offer while the call is in the
queue; and

wherein the automatic call distributor is further
30 operative to move the call from the queue to a priority
queue in response to the acceptance, the priority queue
having a guarantee of response within a predetermined time.

7.   A method for call processing, comprising:
35   receiving a call;

if a request for an earlier answer for the call is not
received,

answering the call within a first time period;
and
40   if a request for an earlier answer for the call is

12

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received after the step of receiving the call,

answering the call within a second time period
that is shorter than the first time period.

5   8.   A method for call processing, comprising:
          receiving a call;
          transmitting an upgrade offer;
          receiving a response to the upgrade offer;
          if the response does not indicate an acceptance of the
10 upgrade offer,
          answering the call within a first time period;
    and
          if the response indicates an acceptance of the upgrade
    offer,
15   answering the call within a second time period
    that is shorter than the first time period.

    9.   A method for call processing, comprising:
          receiving a call;
20   placing the call in a queue;
          transmitting an upgrade offer;
          receiving an acceptance of the upgrade offer; and
          moving the call up in the queue in response to the
    received acceptance, thereby moving the call closer to a
25 top of the queue.

    10.   A method for call processing, comprising:
          receiving a call;
          placing the call in a queue, the call having a
30 position in the queue;
          transmitting an upgrade offer;
          receiving an acceptance of the upgrade offer; and
          repositioning the call in the queue to a higher rank.

35 11.   A method for call processing, comprising:
          receiving a call;
          placing the call in a queue, the call having a
    position in the queue;
          transmitting an upgrade offer;
40   receiving an acceptance of the upgrade offer; and

13

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altering the position of the call in the queue such
that the call may be answered in a shorter period of time
than if the position had not been altered.

5   12.   A method for call processing, comprising:
        receiving a call;
        placing the call in a queue;
        transmitting an upgrade offer while the call is in the
queue;
10   receiving an acceptance of the upgrade offer while the
call is in the queue; and
        moving the call from the queue to a priority queue in
response to the acceptance, the priority queue having a
guarantee of response within a predetermined time.
15

13.   An automatic call distributor operative in combination
with a voice response unit to process received calls,
comprising:
        a) means for arranging call identifiers in a queue in
20 dependence upon a time of receipt of calls corresponding
thereto;
        b) means, operational in accord with predetermined
criteria, for outputting a message transmission signal
which causes said voice response unit to provide a message
25 to a caller, the caller having a call identifier in said
queue, said message offering an option for the caller's
call to be moved in said queue in exchange for a payment;
and
        c) means responsive to said· means b) indicating said
30 caller's acceptance of said offer, by moving said caller's
call identifier in said queue so as to enable for said
caller's call to be answered in a shorter period of time
than if the offer had not been accepted.

35 14.   The automatic call distributor as recited in claim 13,
wherein said predetermined criteria is determined by said
means b) measuring a time delay before a response is
expected to be available for said call corresponding to a
call identifier; and if the time delay expected before a
40 response exceeds a time delay threshold, signaling said

14

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voice response unit to present said message to said caller.

15. The automatic call distributor as recited in claim 13,
wherein said predetermined criteria is based on a rank
5 position of said call identifier in said queue and if the
rank position of said call exceeds a preset value,
signaling said voice response unit to present said message
to said caller.

10 16. The automatic call distributor as recited in claim 13,
wherein said predetermined criteria is based on (i) a time
delay anticipated before a response is expected to be
available for said call corresponding to a call identifier
and (ii) a determining of a rank position of said call in
15 said queue; and
if the time delay expected before a response exceeds a time
delay threshold or if the rank position of said call
identifier exceeds a preset value, signaling said voice
response means to dispatch said message to said caller.
20

17. The automatic call distributor as recited in claim 13,
wherein said means c) places said call in a further queue
which assures an earlier response to said call.

25 18. An apparatus for processing received calls,
comprising:
call distribution means for arranging call identifiers in a
queue in dependence upon a time of receipt of calls
corresponding thereto and operational in accordance with
30 predetermined criteria, for outputting a message
transmission signal;
voice response means operative in accord with said message
transmission signal from said call distribution means, for
providing a message to a caller whose call identifier is
35 present in said queue, said message offering an option for
the caller's call to be assured of an earlier response in
exchange for a payment, and for informing said call
distribution means of said caller's acceptance of said
offer; and
40 said call distribution means responsive to said informing

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for moving said caller's call identifier in said queue so
as to enable said caller's call to be answered in a shorter
period than if the offer had not been accepted.

5   19. The apparatus as recited in claim 18, wherein said
predetermined criteria is determined by said call
distribution means measuring a time delay before a response
is expected to be available for said call corresponding to
a call identifier; and said voice response means is

10   operative to present said message to said caller if the
time delay expected before a response exceeds a time delay
threshold.

20. The apparatus as recited in claim 18, wherein said

15   predetermined criteria is determined by said call
distribution means determining a rank position of said call
in said queue and said voice response means is operative to
present said message to said caller if the rank position of
said call exceeds a preset value.

20

21. The apparatus as recited in claim 18, wherein said
predetermined criteria is determined by said voice response
means offering to all callers an option to bid against
other callers for relative position within said queue.

25

22. The apparatus as recited in claim 18, wherein said
call distribution means places said call identifier in a
further queue which assures an earlier response to said
call.

30

23. The apparatus as recited in claim 18, wherein said
call distribution means places said call identifier at a
position in said queue that assures an earlier response.

35   24. A method for processing calls in a telephone system,
comprising the steps of:
    a) arranging call identifiers in a queue in dependence
upon a time of receipt of calls corresponding thereto;
    b) in accord with a criteria, providing a message to a

40   caller, whose call identifier is present in said queue,

16

SUBSTITUTE SHEET (rule 26)

said message offering an option for the caller's call to be
assured of an earlier answer in exchange for a payment; and
        c) responding to said caller's acceptance of said
offer by arranging for said caller's call to be answered in
5   a shorter period than if the offer had not been accepted.

25.   The method as recited in claim 24, wherein step b)
comprises the further steps of:
        b1) measuring a time delay expected before a response
10   is expected to be available for said call corresponding to
a call identifier; and
        b2) if the time delay expected before a response
exceeds a time delay threshold, presenting said message to
said caller.
15

26.   The method as recited in claim 24, wherein step b)
comprises the further steps of:
        b1) determining a rank position of said call in said
queue; and
20   b2) if the rank position of said call exceeds a preset
value, presenting said message to said caller.

27.   The method as recited in claim 24, wherein step b)
comprises the further step of:
25   b1) offering to said caller an option to bid against
other   callers   for a relative position within said
queue.

28.   The method as recited in claim 24, wherein step c)
30   further comprises:
        c1) placing said call identifier at a position in said
queue that assures an earlier response.

29.   The method as recited in claim 24, wherein step c)
35   comprises the further steps of:
        c1) placing said call in another queue which assures
an earlier response to said call.

17

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FIG. 1

2/8

INCOMING CALLS 26   10   20 TO AGENT 16

SWITCH NETWORK

24

RAM   ROM   ACD
INTERFACE
32   34
48

CLOCK   CPU   COMMUNICATION
PORT   46
33   30   AGENT
INTERFACE

44

36

TRANSACTION PROCESSOR
38

ROUTING DATABASE
40

AGENT DATABASE
42

FIG. 2

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3/8
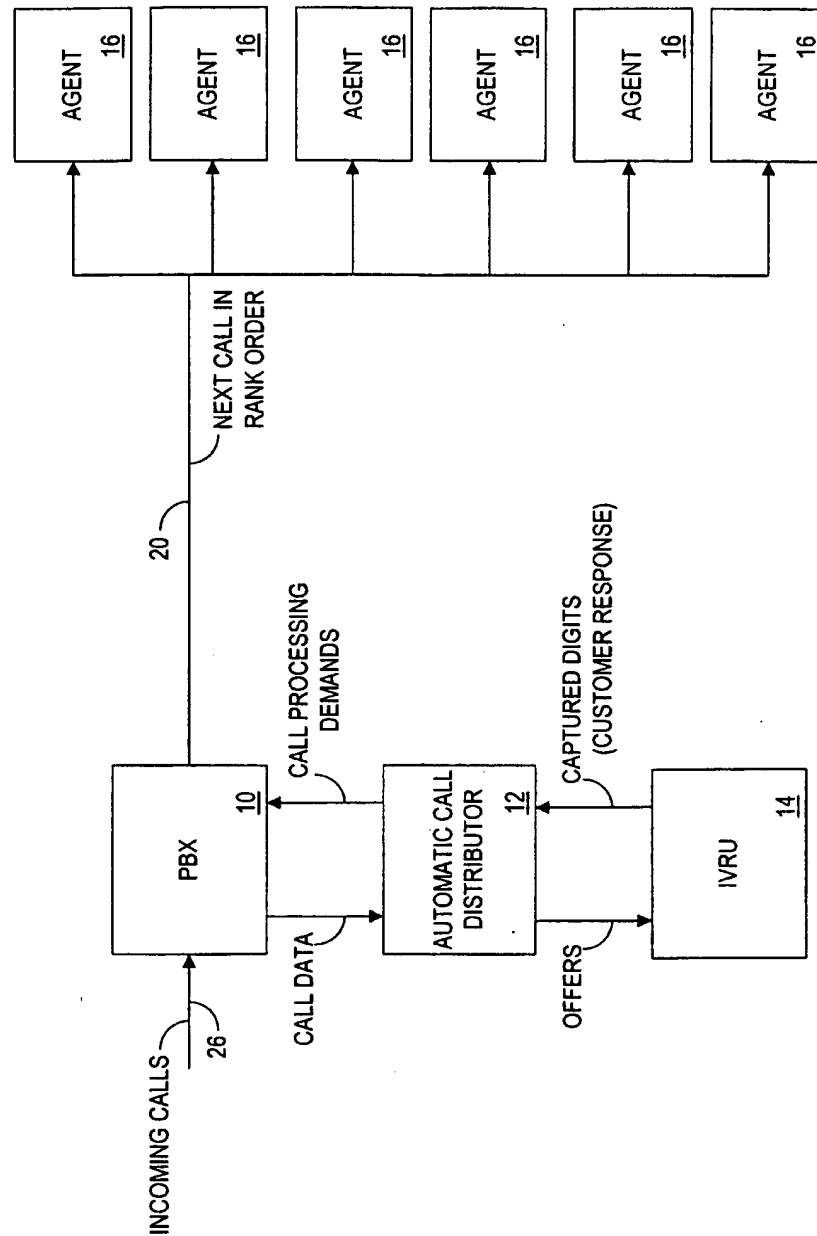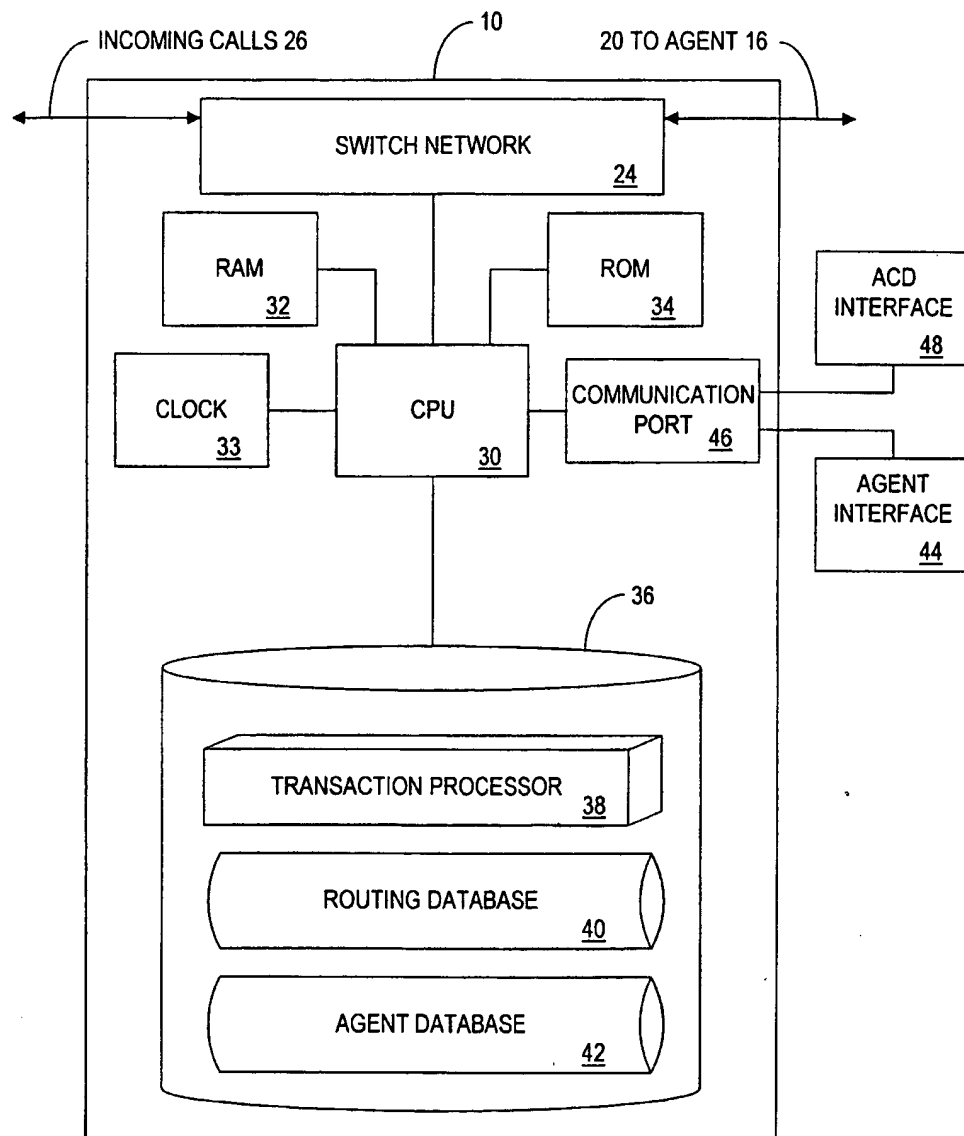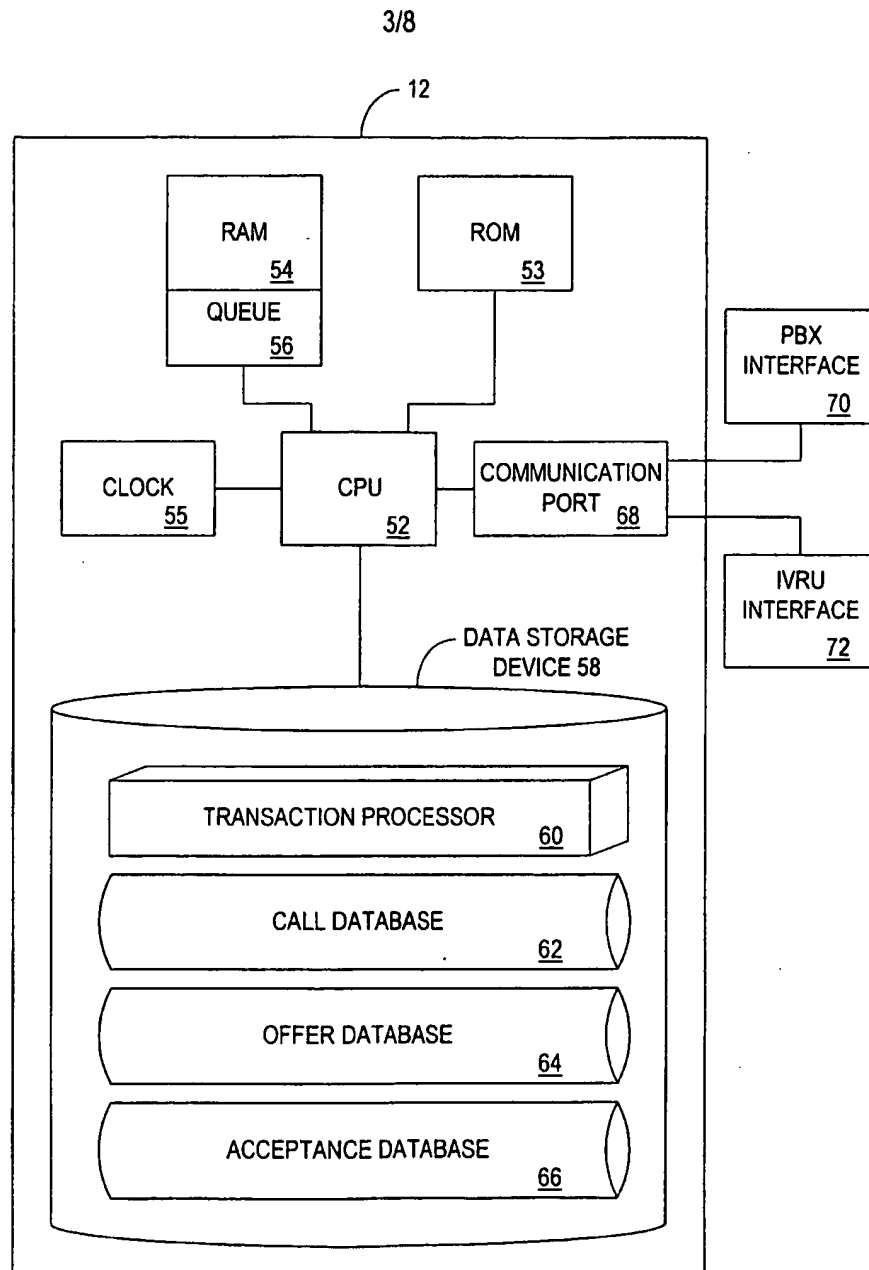
FIG. 3

4/8

CALL DATABASE 62

PHONE NUMBER	CALL TRACKING NUMBER	CALL RANK	TIME RECEIVED	ACCEPTANCE TRACKING NUMBER	OFFER TRACKING NUMBER

FIG. 4A

OFFER DATABASE 64

CALL TRACKING NUMBER	PHONE NUMBER	OFFER TRACKING NUMBER	OFFER DESCRIPTION	TIME OF OFFER	NUMBER OF OFFERS MADE

FIG. 4B

ACCEPTANCE DATABASE 66

CALL TRACKING NUMBER	PHONE NUMBER	OFFER TRACKING NUMBER	PAYMENT METHOD	PAYMENT DATA	TIME OF OFFER ACCEPTANCE

FIG. 4C

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5/8

PBX CALL
PROCESSING

```
┌─────────────────────────────────────────────────────┐
│  CALL COMES IN TO PRIVATE BRANCH EXCHANGE (PBX)        │
│                                               100     │
└─────────────────────────────────────────────────────┘
                         │
                         ▼
┌─────────────────────────────────────────────────────┐
│  PBX EXTRACTS ROUTING TELEPHONE NUMBER (RTN)          │
│                                               102     │
└─────────────────────────────────────────────────────┘
                         │
                         ▼
┌─────────────────────────────────────────────────────┐
│  IDENTIFIES NUMBER VIA DIALED NUMBER IDENTIFICATION   │
│               SERVICE (DNIS)                          │
│                                               104     │
└─────────────────────────────────────────────────────┘
                         │
                         ▼
┌─────────────────────────────────────────────────────┐
│  SEARCHES ROUTING DATABASE FOR DNIS ROUTING          │
│               INSTRUCTIONS                            │
│                                               106     │
└─────────────────────────────────────────────────────┘
                         │
                         ▼
┌─────────────────────────────────────────────────────┐
│  ROUTES CALL TO AUTOMATED CALL DISTRIBUTOR (ACD)      │
│                                               108     │
└─────────────────────────────────────────────────────┘
                         │
                         ▼
                        ( A )
                     TO FIG. 6
```

FIG. 5

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6/8

FROM FIG. 5

ORDER UPGRADE
OFFERING

(A)

ACD LOGS CALL AND UPDATES CALL DATABASE

110

CREATES ORDER UPGRADE OFFER BASED ON CALL RANK AND
ESTIMATED WAIT TIME

112

INSTRUCTS PBX TO TAKE CALL OFF HOLD

114

AUTOMATED CALL DISTRIBUTOR SENDS ORDER UPGRADE
OFFER TO IVRU

116

IVRU PRESENTS THE ORDER UPGRADE OFFER TO THE CALLER

118

(B)

TO FIG. 7

FIG. 6

7/8

FROM FIG. 6   ORDER UPGRADE
                        OFFERING

(B)

IVRU CAPTURES DIGITS (CUSTOMER RESPONSE)

120

IVRU TRANSMITS ACCEPT/REJECT DATA TO ACD

122

HAS
OFFER BEEN ACCEPTED   NO   NEW OFFER
BY CALLER?   CREATED AND SENT
                                           TO CALLER
124   128

YES

ACCEPTANCE DATA STORED IN THE ACCEPTANCE DATABASE

126

(C)

TO FIG. 8

FIG. 7

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8/8

FROM FIG. 7

RANK
REASSIGNMENT

(C)

AUTOMATED CALL DISTRIBUTOR RECEIVES ACCEPTED OFFER
DATA FROM IVRU
130

AUTOMATED CALL DISTRIBUTOR PROCESSES THE DATA AND
REASSIGNS A NEW RANK TO THE CALL
132

NEW RANK IS STORED IN THE CALL ORDER DATABASE
134

NEW CALL RANK IS SENT TO THE PRIVATE BRANCH EXCHANGE
AND CALL IS OFFICIALLY MOVED UP IN THE QUEUE
136

FIG. 8

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